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AN ARCHEOLOGICAL OVERVIEW AND MANAGEMENT PLAN FOR  
ROTTERDAM HOUSING AREAS NUMBERS 1 AND 2(U) ENVIROSPHERE  
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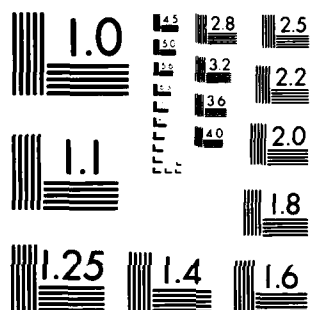
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**Final  
Report No.7**

January 1984

**An Archeological Overview and Management Plan  
for Rotterdam Housing Areas Nos. 1 and 2**

Under Contract CX4000-3-0018  
with the

**National Park Service  
U.S. Department of the Interior**  
Philadelphia, Pennsylvania 19106

for the  
U.S. Army Materiel Development and  
Readiness Command

by

**Envirosphere Company**

2 World Trade Center  
New York, New York 10048

Prepared under the Supervision of

Joel I. Klein, Principal Investigator

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<b>12. Abstract (Limit: 200 words)</b>  This archeological overview and management plan provides a tool which will assist DARCOM in its efforts to comply with regulations and procedures which relate to historic preservation ( <u>Technical Manual 5-801-01</u> , <u>Technical Note No. 78-17</u> , <u>Resources Management</u> ; 32 CFR 650.18-650.193 <u>Army Regulation 420-XX</u> ; <u>Army Regulation 200-1</u> ; <u>Army Regulation 200-2</u> ; 36 CFR 800) at Rotterdam Housing. This document summarizes data relating to the area's environmental history; cultural chronology; historic and modern ground disturbances previous archeological surveys; presently identified archeological resources; known artifact, ecofact, and or documentary collections relating to archeological resources; potentially identifiable but not presently recorded archeological resources; significant archeological resources; ongoing and planned activities that could effect archeological resources; and locational data of potential archeological resources. No significant archeological remains are known to exist at Rotterdam Housing. Prehistoric sites and early historic sites have been reported in the general vicinity and it is possible that undisturbed portions of Rotterdam Housing have archeological potential. This study recommends that the responsible installation develop procedures which will: a) insure consideration of unrecorded archeological cultural resources when implementation of development plans will result in disturbance of previously undisturbed portions of Rotterdam Housing; and b) deal with emergency fortuitous discoveries of archeological resources. Since there are presently no ground-disturbing future development plans for Rotterdam Housing, this study does not recommend site or project specific archeological management activities.		<b>12. Type of Report &amp; Period Covered</b> Final Report	
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## MANAGEMENT SUMMARY

This archeological overview and management plan provides a tool which will assist DARCOM in its efforts to comply with regulations and procedures which relate to historic preservation (Technical Manual 5-801-01, Technical Note No. 78-17, Resources Management; 32 CFR 650.18-650.193; Army Regulation 420-XX; Army Regulation 200-1; Army Regulation 200-2; 36 CFR 800) at Rotterdam Housing Areas Nos. 1 and 2. This document summarizes data relating to the area's environmental history, cultural chronology, historic and modern ground disturbances, previous archeological surveys, presently identified archeological resources, known artifact, ecofact, and or documentary collections relating to archeological resources, potentially identifiable but not presently recorded archeological resources, significant archeological resources, ongoing and planned activities that could affect archeological resources, locational data of known archeological resources, and locational data of potential archeological resources.

No significant archeological remains are known to exist at Rotterdam Housing. Prehistoric sites and early historic sites have been reported in the general vicinity and it is possible that undisturbed portions of Rotterdam Housing have archeological potential.

This study recommends that the responsible installation develop procedures which will: a) insure consideration of unrecorded archeological cultural resources when implementation of development plans will result in disturbance of previously undisturbed portions of Rotterdam Housing, and b) deal with emergency fortuitous discoveries of archeological resources. Since there are presently no ground-disturbing future development plans for Rotterdam Housing which result in ground disturbance, this study does not recommend site or project specific archeological management activities, at this time. However, it should be recognized that ongoing maintenance programs may also affect undisturbed portions of Rotterdam Housing and thus may disturb as yet unrecorded archeological cultural resources.

#### PREPARERS AND QUALIFICATIONS

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Sydne B. Marshall is Assistant Technical Manager for the DARCOM project, responsible for the day-to-day operation of the project. She is the senior author of this archeological overview and management plan. She holds B.A., M.A, Master of Philosophy and Ph.D. degrees in Anthropology. Over the past 12 years, Dr. Marshall has participated in the excavation, analysis, management, and reporting of many large and small archeological projects in northeastern North America. She is currently a Senior Engineer with Envirosphere Company.

Joel I. Klein is Project Manager for the DARCOM project. He is a contributing author of this archeological overview and management plan. He holds a B.S. in Anthropology and Physics and M.A. and Ph.D. degrees in Anthropology, and is certified by the Society of Professional Archeologists in field research, and cultural resource management. His 15 years of professional experience have been in anthropological and archeological research, and cultural resource management, including several projects in New York. He has participated in archeological investigations across the United States. He is presently a Principal Engineer with Envirosphere Company.

#### ACKNOWLEDGEMENTS

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Bruce Fullem and Chuck Florance, State Historic Preservation Office, and Bob Funk, New York State Museum, were very helpful during the data gathering phases of this project.

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## CONTENTS

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	<u>PAGE</u>
NTIS FORM	ii
MANAGEMENT SUMMARY	iii
PREPARERS AND QUALIFICATIONS	iv
ACKNOWLEDGEMENTS	v
LIST OF TABLES	viii
LIST OF FIGURES	ix
1.0 INTRODUCTION	1-1
1.1 Purpose and Need	1-1
1.2 Rotterdam Housing Areas Nos. 1 and 2	1-3
1.3 Summary of Previous Archeological Work Conducted at Rotterdam Housing	1-3
1.4 The Sociocultural Context of the Archeological Resources at Rotterdam Housing	1-7
2.0 AN OVERVIEW OF THE CULTURAL AND RELEVANT NATURAL HISTORY OF ROTTERDAM HOUSING	2-1
2.1 The Physical Environment	2-1
2.1.1 Earth Resources	2-1
2.1.2 Water Resources	2-1
2.1.3 Modern Climate	2-1
2.1.4 Plant Resources	2-1
2.1.5 Animal Resources	2-2
2.1.6 Paleoenvironment	2-2
2.2 The Cultural Environment	2-5
2.2.1 Prehistory	2-5
2.2.2 Ethnohistory	2-12
2.2.3 History	2-12
2.3 Archeological Research Directions	2-13
2.3.1 Regional Concerns	2-13
2.3.2 Installation-Specific Archeological Research Directions	2-14

	<u>PAGE</u>
3.0 AN ASSESSMENT OF ARCHEOLOGICAL RESOURCES PRESERVATION AND SURVEY ADEQUACY	3-1
3.1 Environmental Constraints to Site Preservation	3-1
3.2 Historic and Recent Land Use	3-1
3.3 Previous Cultural Resource Investigations; Coverage and Intensity	3-8
3.4 Summary Assessments of Data Adequacy, Gaps	3-8
4.0 KNOWN ARCHEOLOGICAL RESOURCES ON ROTTERDAM HOUSING	4-1
4.1 Known Archeological Resources at Rotterdam Housing	4-1
4.2 Potential Archeological Resources at Rotterdam Housing	4-1
5.0 AN ASSESSMENT OF THE SIGNIFICANCE OF THE ARCHEOLOGICAL RESOURCES AT ROTTERDAM HOUSING	5-1
5.1 The Significant Resources	5-1
5.2 Ideal Goals and Objectives	5-1
6.0 A RECOMMENDED ARCHEOLOGICAL MANAGEMENT PLAN FOR ROTTERDAM HOUSING	6-1
6.1 Facility Master Plans and Proposed Impacts	6-1
6.2 Appropriate Archeological Management Goals Within Rotterdam Housing	6-1
6.2.1 General Facility Planning	6-1
6.2.2 Project-Specific Resource Protection or Treatment Options	6-1
6.2.3 A Summary of Recommended Management Directions and Priorities for Effective Compliance and Program Development	6-1
6.3 Estimated Scopes-of-Work and Cost Levels for Presently Identifiable Management Needs	6-3
6.3.1 Survey of the Undisturbed Portions of Rotterdam Housing	6-3
6.3.2 Unanticipated Archeological Site Discovery Procedure	6-3
7.0 SUMMARY	7-1
8.0 REFERENCES CITED	8-1

# TABLES

<u>Table</u>		<u>PAGE</u>
2-1	A SUMMARY OF THE ENVIRONMENTAL HISTORY OF THE AREA OF ROTTERDAM HOUSING	2-3
2-2	A SUMMARY OF THE CULTURAL CHRONOLOGY OF THE AREA OF ROTTERDAM HOUSING	2-6
3-1	A SUMMARY OF HISTORIC AND MODERN GROUND DISTURBANCE THAT MIGHT LIMIT THE PRESENT ARCHEOLOGICAL RESOURCE BASE AT ROTTERDAM HOUSING	3-5
3-2	ARCHEOLOGICAL SURVEYS CONDUCTED ON ROTTERDAM HOUSING	3-9
3-3	ARCHEOLOGICALLY RELEVANT RESEARCH INVESTIGATIONS, EXCLUSIVE OF ARCHEOLOGICAL SURVEYS, CONDUCTED ON ROTTERDAM HOUSING	3-10
4-1	PRESENTLY IDENTIFIED ARCHEOLOGICAL RESOURCES AT ROTTERDAM HOUSING: ADMINISTRATIVE DATA	4-2
4-2	PRESENTLY IDENTIFIED ARCHEOLOGICAL COMPONENTS AT ROTTERDAM HOUSING: DESCRIPTIONS	4-3
4-3	PRESENTLY KNOWN ARTIFACT, ECOFACT, OR DOCUMENTARY COLLECTIONS FROM ARCHEOLOGICAL RESOURCES AT ROTTERDAM HOUSING	4-4
4-4	POTENTIALLY IDENTIFIABLE BUT NOT PRESENTLY RECORDED ARCHEOLOGICAL RESOURCES AT ROTTERDAM HOUSING	4-5
5-1	SUMMARY OF SIGNIFICANT ARCHEOLOGICAL RESOURCES AT ROTTERDAM HOUSING	5-2
6-1	A SUMMARY OF ON-GOING AND PLANNED ACTIVITIES AT ROTTERDAM HOUSING THAT COULD AFFECT ARCHEOLOGICAL RESOURCES	6-2

# FIGURES

<u>Figure</u>		<u>PAGE</u>
1-1	MAP OF THE GENERAL VICINITY OF ROTTERDAM HOUSING	1-4
1-2a	DETAILED MASTER MAP OF ROTTERDAM HOUSING (HOUSING AREA NO. 1)	1-5
1-2b	DETAILED MASTER MAP OF ROTTERDAM HOUSING (HOUSING AREA NO. 2)	1-6
3-1a	A MAP OF AREAS OF HISTORIC AND/OR MODERN GROUND DISTURBANCE THAT MIGHT LIMIT THE PRESENT ARCHEOLOGICAL RESOURCE BASE AT ROTTERDAM HOUSING (HOUSING AREA NO. 1)	3-3
3-1b	A MAP OF AREAS OF HISTORIC AND/OR MODERN GROUND DISTURBANCE THAT MIGHT LIMIT THE PRESENT ARCHEOLOGICAL RESOURCE BASE AT ROTTERDAM HOUSING (HOUSING AREA NO. 2)	3-4

### 1.1 PURPOSE AND NEED

This archeological overview and management plan will assist the U.S. Army Materiel Development and Readiness Command (DARCOM) in its efforts to comply with laws and regulations concerning the management of archeological resources at Rotterdam Housing Areas Nos. 1 and 2 (Rotterdam Housing).

The National Historic Preservation Act of 1966 as amended (94 Stat. 2988) affirmed the policy of the federal government (Sec. 2(3)) to "administer federally owned, administered or controlled prehistoric and historic resources in a spirit of stewardship for the inspiration and benefit of present and future generations." Section 110(a)(1) of the code specifies that each federal agency is responsible for the preservation of such resources on agency-owned or controlled lands. DARCOM is committed to the implementation of that policy, following the guidelines for historic resource management set forth in the 1966 Act and related laws, regulations, and technical guidance.

DARCOM has contracted with the U.S. Department of the Interior's National Park Service to provide technical guidance for the development of DARCOM installation cultural resource overviews and management plans. The program is entitled the DARCOM Historical/Archeological Survey (DHAS). The National Park Service has in turn separated this review and planning program into two major elements, architectural and archeological. The architectural review and planning function is being directed by the Service's Historic American Buildings Survey (HABS), while the archeological resource assessment and planning function is being handled through the Service's Interagency Resources Management Division (IRMD). The archeological function includes both prehistoric and historical archeology.

Under the requirements of the National Historic Preservation Act (NHPA) of 1966 as amended (80 Stat. 915, 94 Stat. 2987; 16 USC 470), DARCOM must:

- inventory, evaluate, and where appropriate nominate to the National Register of Historic Places all archeological properties under agency ownership or control (Sec. 110(a)(2))
- prior to the approval of any ground-disturbing undertaking, take into account the project's effect on any National Register - listed or eligible property; afford the Advisory Council on Historic Preservation a reasonable opportunity to comment on the proposed project (Sec. 106)

- complete an appropriate data recovery program on an eligible or listed National Register archeological site prior to its being heavily damaged or destroyed (Sec. 110(b), as reported by the House Committee on Interior and Insular Affairs [96th Congress, 2d Session, House Report No. 96-1457, p. 36-37])

Since the passage of the National Historic Preservation Act Amendments of 1980, DARCOM has begun a more active commandwide program in historic resource management. DARCOM's management program involves several steps. The first step is a literature review and preliminary evaluation of known cultural resources on DARCOM facilities. This provides a basis for prediction of the overall resource base requiring management. The second step involves applying the understood parameters of the resource base in a plan which takes into consideration both short- and long-term command activities and goals.

Other compliance regulations taken into consideration by this archeological overview and management plan include:

- o The Archeological and Historic Preservation Act of 1974 (88 Stat. 174, 16 USC 469), which requires that notice of an agency project that will destroy a significant archeological site be provided to the Secretary of the Interior; either the Secretary or the notifying agency may support survey or data recovery programs to preserve the resource's information values.
- o The Archeological Resources Protection Act of 1979 (93 Stat. 721, 16 USC 470aa; this supersedes the Antiquities Act of 1906 [93 Stat. 225, 16 USC 431-43]), with provisions that effectively mean that
  - The Secretary of the Army may issue excavation permits for archeological resources on DARCOM lands (Sec. 4)
  - Anyone damaging an archeological resource on DARCOM lands may incur criminal (Sec. 6) or civil penalties (Sec. 7)
- o 36 CFR 800, "Protection of Historic and Cultural Properties" (44 FR 6068, as amended in May 1982); these regulations from the Advisory Council on Historic Preservation set forth procedures for compliance with Section 106 of the National Historic Preservation Act
- o Regulations from the Department of the Interior setting forth procedures for determining site eligibility for the National Register of Historic Places (36 CFR 60, 36 CFR 63), standards for data recovery (proposed 36 CFR 66), and procedures implementing the Archeological Resources Protection Act (proposed 36 CFR 69)
- o Guidance from the U.S. Department of the Army as to procedures and standards for the preservation of historic properties (32 CFR 650.181-650.193; Technical Manual 5-801-1; Technical Note 78-17; Army Regulation 420-XX; Army Regulation 200-1; Army Regulation 200-2).

The formulation of archeological plans for DARCOM installations is part of a developing national acceptance of the historic Resource Protection Planning Process (RP3) (HCRS 1980). RP3 presents an outline for the development of preservation plans, which, in turn, provide an analytical structure for preservation decision-making. This archeological overview and management plan has been prepared with those guidelines in mind.

This report is based upon data made available by installation representatives as of January 10, 1984.

#### 1.2 ROTTERDAM HOUSING AREAS NOS. 1 AND 2

Rotterdam Housing Areas Nos. 1 and 2 comprise approximately 10 acres in the Town of Rotterdam, Schenectady County, New York. This installation is composed of two housing areas located in a predominantly residential community. Housing Area No. 1 occupies 8.53 acres along the south side of New York State Highway No. 7. Housing Area No. 2 occupies 1.12 acres along the west side of Wescott Road which intersects New York State Highway No. 7 east of Housing Area No. 1 (Figures 1-1, 1-2a, 1-2b). Three sides of the boundary of this property are adjacent to the former Schenectady Army Depot, presently an industrial complex.

The Rotterdam Housing Areas (also called Rotterdam Housing) originally formed part of the Schenectady Army Depot. When the Depot was phased out in 1968, the Department of Defense severed the housing areas for retention and assignment to Watervliet Arsenal. The mission of Rotterdam Housing is to provide housing for personnel from branches of the military who have assignments in the Albany, Troy, Schenectady, and Watervliet, New York area.

Rotterdam Housing contains 19 buildings which include 8 multi-family units, 2 single-family units, 8 multiple garages, and 1 maintenance shop (originally built as a garage). The 8 multi-family buildings provide 50 family living units. Forty-six (46) of these are Wherry Housing constructed in 1952. One of the single family units was constructed in 1939 and the other was constructed in 1918. The maintenance shop was built in 1916.

#### 1.3 SUMMARY OF PREVIOUS ARCHEOLOGICAL WORK CONDUCTED AT ROTTERDAM HOUSING

While no systematic archeological survey has been conducted directly at Rotterdam Housing, archeological sites have been recorded in the vicinity of the installation. In the northwest part of Rotterdam township, about 1/2 mile west of Pattersonville village, a prehistoric burial site has been recorded (Parker 1920:692). This was located on low land, at the foot of a hill not far from the mouth of a small stream.

Some scattered prehistoric artifacts were found during a recent survey of the Campbell Mansion site, about 1 1/2 miles north of Rotterdam Housing (Fullem, 1983, personal communication). More intensive investigation is planned to more precisely identify the artifactual context and extent of the site.





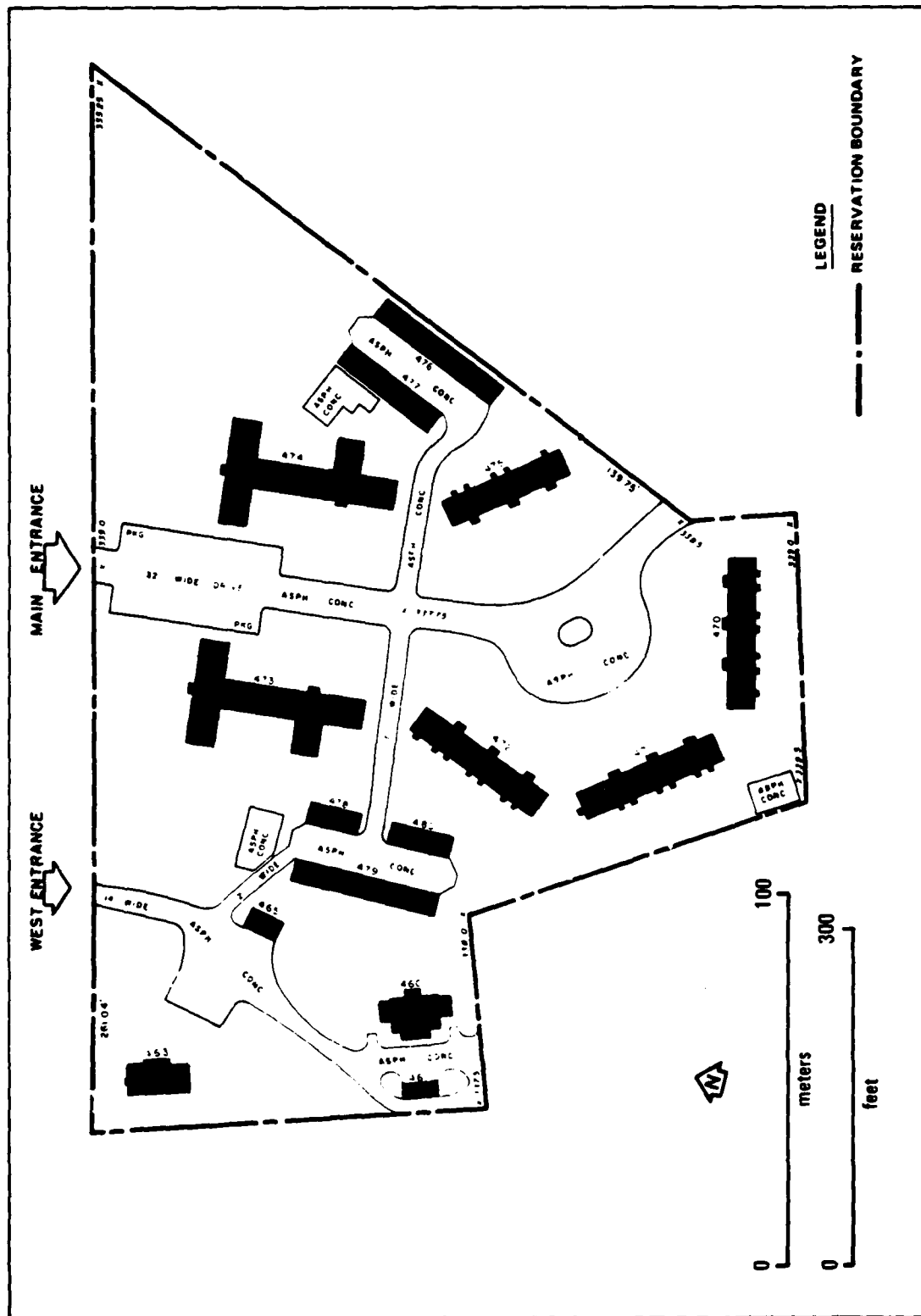


Figure 1-2a. DETAILED MASTER MAP OF ROTTERDAM HOUSING (HOUSING AREA NO.1)

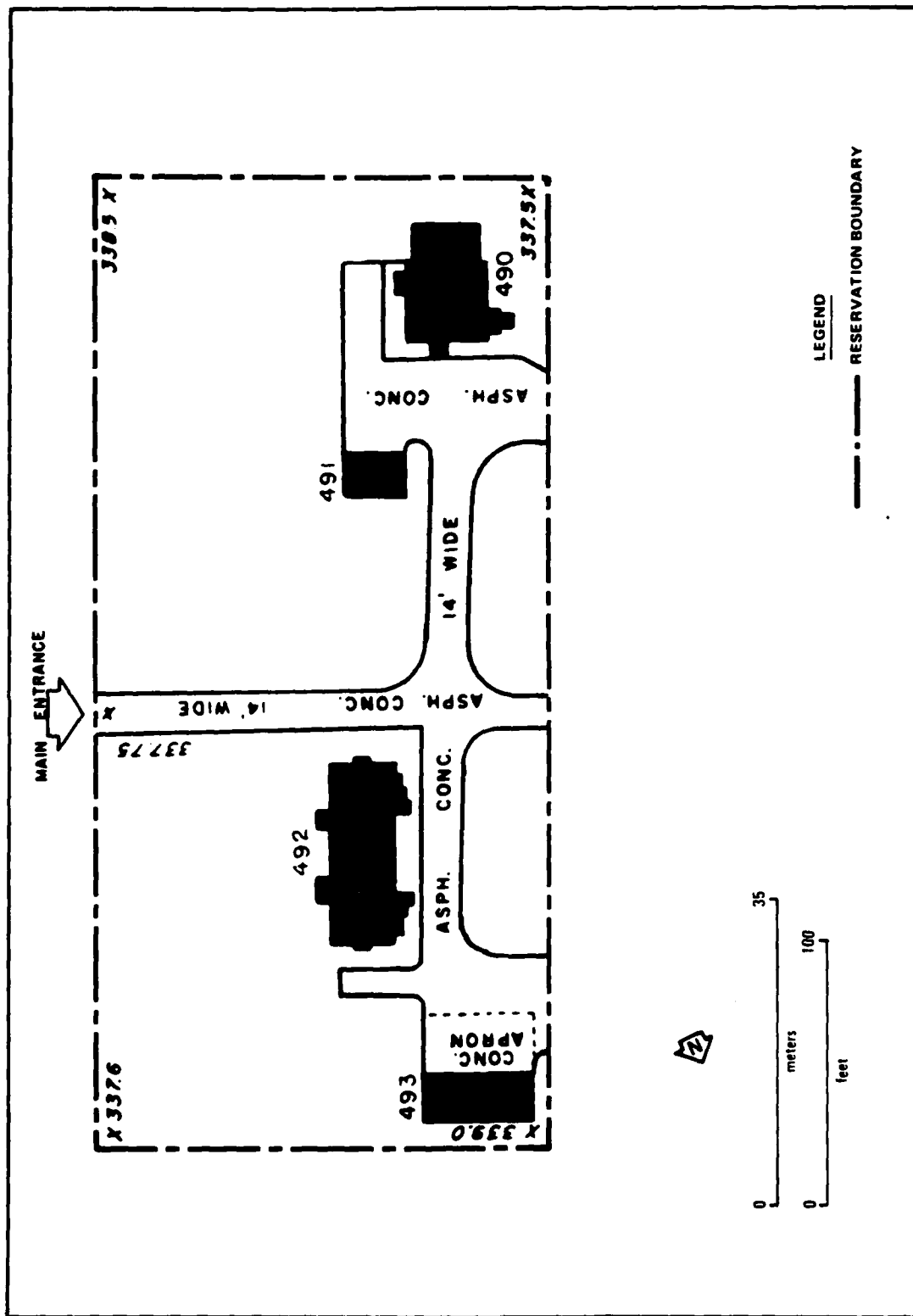


Figure 1-2b. DETAILED MASTER MAP OF ROTTERDAM HOUSING (HOUSING AREA NO. 2)

About 1/2 mile northeast of Rotterdam Housing is an area currently occupied by Riverside Park. It is surrounded by streets and associated urban development. This area may represent the location of the earliest Dutch settlement in the Rotterdam area. Macauley, quoted by Beauchamp (1900:142) stated that

between 1616 and 1620 the Dutch bought land at Ohnowalagantle, now Schenectady, where there was then a large Mohawk town and some hamlets. The principal village was within the present city and the lands were cultivated. Traditionally, the town occupied the site of Connugh-harie-gugh-harie, the ancient capital of the Mohawks - Macauley 2:284 (sic. Beauchamp 1900:142).

Beauchamp (1900:142) indicated that he does not place much stock in Macauley's statement. Parker (1920:692) described a village site within the present limits of Schenectady, along the banks of the Mohawk, where the Dutch found cleared tracts of land when they entered the region. This is probably the same site noted by Beauchamp.

Prehistoric sites have been recorded on the north side of the Mohawk River in the town of Glenville about four miles north of Rotterdam (Beauchamp 1900; Parker 1920). These include numerous camp sites near Hoffmans Ferry (Parker 1920:691-2).

In 1894, Van Epps described excavations of a prehistoric cemetery on the Toll Cute farm (cited in Parker 1920:691). Beauchamp places this site about five miles northwest of Schenectady (1900:142).

Several sites have also been noted on and near the headwaters of Chautanoonda Creek. A prehistoric village site was also noted on Touveuna Hill, directly south of Glenville near Pattersonville. Another prehistoric village site, covering about five acres, was noted by Parker (1920:692) as near Rexford Flats, about one mile east of Alpaus and about three miles northeast of Schenectady.

#### 1.4 THE SOCIOCULTURAL CONTEXT OF THE ARCHEOLOGICAL RESOURCES AT ROTTERDAM HOUSING

The town of Rotterdam is in Schenectady County. The historic development of the area began as a farming and fur trading community. The earliest European settler in Schenectady County, Alexander Lindsay Glen, acquired land on the north shore of the Mohawk River from the Mohawk Indians and built a house in 1658 (Craig and Papp 1976).

In the early nineteenth century, Rotterdam's population was almost exclusively of Dutch origin. In 1820, Rotterdam's population totaled 1529. The town also included slaves and almost 80 resident free Blacks (Craig and Papp 1976).

According to the 1980 Census, Rotterdam's total population was 22,933. Rotterdam's population is 99 percent white. Other racial groups represented are Black (142), American Indian (15), Chinese (27), Filipino (12), Asian American (12), Korean (6), Vietnamese (2), Japanese (1), and Other (6). All represent less than one percent of the total population (U.S. Bureau of the Census 1982).

While the Native American population in Rotterdam in the 1980's is small, there are descendants in New York State who maintain an active interest in the disposition of archeological cultural resources. The Onondaga Council of Chiefs of the Iroquois Confederacy have been a vocal watchdog group. They are particularly concerned with the treatment of Native American burials (Chuck Florance, 1983, personal communication.)

2.0

AN OVERVIEW OF THE CULTURAL AND  
RELEVANT NATURAL HISTORY OF ROTTERDAM HOUSING

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2.1 THE PHYSICAL ENVIRONMENT

2.1.1 Earth Resources

Plainfield series soils have been identified at Rotterdam Housing. These soils are deep, nearly level and gently sloping, excessively drained, and coarsely textured. They formed in deep soil on outwash plains, deltas and terraces (USDA 1972).

An 1887 description of Rotterdam stated that with the exception of the flats along the Mohawk River, Rotterdam's surface is hilly in the north and west, and level and sandy in the south and east. These sandy plains lie considerably higher than the lands along the river (Craig and Papp 1976:34).

2.1.2 Water Resources

There are no natural water sources presently flowing through the Rotterdam Housing Areas though one major and several minor sources are located in the vicinity. About two miles to the north is the Mohawk River and its marshy flood plain. In addition, several streams flow within a one mile radius of Rotterdam Housing. The stream to the northeast is a tributary of Poentic Kill. Two other small streams flow about 1/2 mile south of Rotterdam Housing and 1/2 mile west of the installation (USGS 1980 Topographic Map). Additionally, the Sand-Sea Kill is a rapid stream which flows into the Mohawk at Pattersonville. The Platte Kill flows into the Mohawk River five miles west of the city and has many waterfalls (Craig and Papp 1976:34).

2.1.3 Modern Climate

The moderate climate at Rotterdam Housing has been characterized as typical for upstate New York. The mean annual temperature is 48°F. The mean temperature for January, the coldest month, is 24°F and the mean temperature for July, the warmest month, is 74°F. Snowfall averages 50 in. per year and the average yearly precipitation is 37 in.

2.1.4 Plant Resources

Native vegetation in the Rotterdam Housing area falls within the Oak and Northern Hardwood forest types. The predominant species are red,

white, black, chestnut, scarlet and scrub oak in almost pure stands. These adjoin the Northern Hardwood types such as maple, birch and beech. Pure stands of oak generally occur along high ridges and a steep south-facing hillsides (Brooks 1981:19-20). Associated shrubs, many edible, include blueberry, huckleberry, dogwood, varieties of ferns and elderberry, raspberry, goosefoot and smartweed.

#### 2.1.5 Animal Resources

In precolonial times, the regional hardwood forests supported a variety of fauna. Species in the area included white-tailed deer, black bear, elk, beaver, woodchuck, raccoon, otter, bobcat, gray fox, timber wolf, squirrel, chipmunk, fisher, muskrat, turkey, and others. Migratory birds were available seasonally.

The Mohawk River and tributary streams also provided food sources. Such fish as brook trout, small-mouthed bass, and wall-eyed pike would have been available (Funk 1976:7).

#### 2.1.6 Paleoenvironment

In northeastern North America, the earliest recorded human occupation occurred after the final phases of the Wisconsin glaciation. In the northern Hudson Valley, Connally and Sirkin (1973) document deglaciation at about 14,000 BP.

Pollen studies offer the most direct evidence on which to base paleoenvironmental reconstruction of the Rotterdam Housing area (Table 2-1). Pollen samples from Pine Log Camp Bog near Glens Falls, New York indicate that between 15,000 and 10,000 BP the ecological context of Rotterdam Housing developed from a tundra environment, to a pine-birch-spruce community (an open forest), to a community characterized by a spruce maximum (a park woodland environment). The inferred climate for this period was cold. Species such as mammoth and mastodon vanished. Caribou and bison became scarce in the area due to lack of suitable ecological niche (Funk 1976).

After 10,000 to about 7000 BP pine pollen predominated over birch and later oak. The inferred climate at that time was warmer and drier. Gradually rising sea levels caused salt water to transgress into fresh water rivers creating estuarine zones as in the lower Hudson Valley. As the glaciers melted, large ice-dammed inland lakes drained establishing present-day river courses (Newman et al. 1969).

The presence of mixed conifers and deciduous species after 7000 BP suggests warmer, moister conditions. A return to predominance by coniferous species indicates a return to cooler conditions. As deciduous species increased in frequency, so did the diversity of plant and animal species available for human consumption. The diversity of available anadromous fish and birds also increased after 7000 BP. Radiocarbon dates from the Red Maple Swamp, Waterford, Connecticut, indicate approximately modern climatic conditions in southern New England after about 5000 BP (Beetham and Niering 1961).

Table 2-1. A SUMMARY OF THE ENVIRONMENTAL HISTORY OF THE AREA OF ROTTERDAM HOUSING

Connally and Sirkkin 1971 (Western Long Island, N.Y.) Pollen		Connally and Sirkkin 1971 (Pine Log Camp Bog) Pollen	
Date	Inferred Climate	Date	Inferred Climate
7000 BP	Moister, possibly cooler climate; oak, chestnut, birch, hemlock, and holly	7000 BP	Cooler climate; increase in spruce with pine, birch, and hemlock present
	Oak and hickory		Warm, moist climate; hemlock, birch, pine and oak present
	Warm, moist climate; oak and hemlock		Pine and oak predominate
	Warmer, drier climate; pine and oak		Pine and birch predominate
10,000 BP	Pine	10,000 BP	Cold climate, spruce maximum with alder and pine
	Cold climate, spruce and pine		Cold climate; spruce, pine and grass
	Pine and spruce		Cold climate; pine, birch and spruce
	Pine, spruce and NAP*		
15,000 BP	Spruce rise	15,000 BP	
	Cold climate; park-tundra		Cold climate; park-tundra
	Near tundra		Glaciated
	Glaciated		
		17,000 BP	

Note: NAP = Nonarbooreal pollen

Table 2-1. A SUMMARY OF THE ENVIRONMENTAL HISTORY OF THE AREA OF ROTTERDAM HOUSING

Connally and Sirkin 1970 (New Hampton, No. 1) Pollen		Beetham and Niering 1961 (Red Maple Swamp) Pollen	
Date	Inferred Climate	Date	Inferred Climate
7000 BP	Oak, hemlock and chestnut		Moister and possibly cooler; oak, birch, hemlock and chestnut
	Wetter conditions; oak, hemlock, hickory and elm	1970 BP	Oak, birch, hemlock, and chestnut
	Warm; moist conditions; oak and hemlock	5230 BP	Oak, birch, hemlock, chestnut
	Warmer and drier conditions; pine and oak		Warm, moist climate; oak and hemlock
10,000 BP	Pine	8020 BP	Warmer and drier climate; pine
	Cold climate; spruce returns	10,460 BP	Cold climate; spruce
	Cool climate; pine, spruce and oak	10,800 BP	Cold climate; spruce and pine
	Cool, moist climate; pine and spruce	12,780 BP	Cold climate; spruce and birch
	Preboreal climate; pine, spruce, birch		Cold climate; spruce increasing
	Spruce, pine, fir		Very cold; high NAP, spruce, pine, minimum
15,000 BP	Cold climate; pine, birch and tundra elements	13,500 BP	Cold climate; NAP, spruce, pine increases
	Glaciated		



## 2.2 THE CULTURAL ENVIRONMENT

This section presents a summary of the prehistory of the region in which Rotterdam Housing is located. Whenever possible an attempt has been made to relate this information to the actual location of Rotterdam Housing. However, the size of the region considered in the discussion of any one period varies with the amount of data available. Periods for which data are scanty are therefore discussed in more general terms. An outline of the cultural chronology of the Rotterdam Housing area is presented in Table 2-2.

### 2.2.1 Prehistory

Paleo-Indian (10,000-7000 BC). The Paleo-Indian period represents the earliest human occupation of North America. Diagnostic remains associated with the Paleo-Indian period are fluted projectile points and, in the southwest United States, extinct fauna such as mammoth and mastodon. Other artifacts which typify the Paleo-Indian tool assemblages are spurred flake scrapers, drills, large bifaces, pieces esquillees and sidescrapers. Sites from this cultural period in the Northeast are often disturbed and/or have poor or no preservation of faunal materials.

In New York State, Paleo-Indian artifactual assemblages have been collected from the Davis site on Lake Champlain, the Potts site near Oswego, West Athens Hill near Catskill, Kings Road near Coxsackie, Dutchess Quarry Cave in Orange County and Port Mobil on Staten Island (Funk 1976). Additional sites are known from surrounding northeastern states.

A low population density is interpreted for the Paleo-Indian period. The widespread distribution of Paleo-Indian tools made from non-local stone suggests a highly mobile settlement pattern geared to the exploitation of game animals, seasonally available plants and accessible, high quality lithic resources.

Early Archaic (7000-6000 BC). The evidence for Early Archaic occupation is essentially the distribution of bifurcate - base points, Kirk points, and Plano points. Archeological evidence in the northeast suggests that Early Archaic sites cluster in the lowlands, along major rivers, on the coast, or along marsh and swamp lands (Starbuck and Bolian 1981). Sites dated to this period are sparse indicating a very low population density. Several preceramic oyster shell middens in the lower Hudson Valley may relate to this cultural period. Some scattered points diagnostic of the Early Archaic period are known in New York State but as yet there are no recorded Early Archaic sites which have been intensively studied.

Middle Archaic (6000-3500 BC). Population density during this time period remained relatively sparse. Artifact assemblages include scrapers, choppers, celts and other tools which indicate increased woodworking activity. Between 4500-4000 BC, hunters used broad, side-notched points in the lower Hudson Valley. Indians of this period exploited a variety of terrestrial fauna, migratory birds and shellfish in a variety of settings. Economic activities were probably seasonally determined (Ritchie and Funk 1973).

Table 2-2. A SUMMARY OF THE CULTURAL CHRONOLOGY OF THE AREA OF ROTTERDAM HOUSING (Funk 1976; Ritchie and Funk 1973)

Cultural Unit		Date	General Settlement Patterns	General Subsistence Systems	Kinds of Archeological Remains Representative of Period
Tradition	Period or Phase				
American	Mercantile	AD 1930 - present	Urban center with wholesale and retail goods and services. Centers surrounded by dependent suburban neighborhoods. Centers interconnected with complex motor transport system with smaller retail centers and populations or near major thoroughways. Modest rural population.	Urban centers perform major trade functions as well as light and some heavy industry. Goods and services to transient populations important.	Large amounts of glass, metal, and plastics. Many imported goods. Many containers of individual consumer items. Much standardization but variety of electromechanical devices. Frame, brick, concrete, aluminum construction. Some steel supports in industrial construction.
	Heavy Industry	AD 1850-1930	Urban centers with wholesale and retail goods and services also supplying many work areas in heavy industrial settings. Rural communities between urban centers. Moderate roadway development. Canal and railway services important to area's development.	Industries such as Edison Machine Works, oil mill, saw and grist mills, thread and twine factory, and machine works located along streams in the area. Broom manufacturer and agriculture in surrounding areas also important.	Metal, glass and ceramics usually of domestic manufacture. Mechanical devices usually hand, steam or gas powered. Frame, brick, stone and concrete structures. Some iron and steel supports in industrial buildings.
	Rural/Urban Transition	AD 1800-1850	Farmsteads with towns, developing at inter-sections of major roads. Nucleation of population around incipient industrial centers located near water power. Modest road development with some railway services.	Generally self-sufficient rural economy with cottage industries. Early manufacturing and processing industries with limited employment.	Iron, glass, ceramic items. Frame, brick or stone construction.
Frontier	Expansion of European Settlement	AD 1600-1800	Native American population diminishes due to disease and inter-tribal warfare causing shift in settlement locations away from traditional hunting and farming loci near major waterways. Native settlement patterns cease with the formations of reservations in the early 1800's. Dutch farmsteads or boweries replaced Native American settlements.	Trade, hunting, horticulture, gathering	At Native American sites: European trade goods including glass beads, copper kettles, clothing, glass bottles, rings, metal, artifacts; decrease in the number of traditional native artifact forms manufactured from local materials. At Dutch farms: Numerous imported artifacts; items associated with farming and domestic support activities,

Table 2-2. A SUMMARY OF THE CULTURAL CHRONOLOGY OF THE AREA OF ROTTERDAM HOUSING (Funk 1976; Ritchie and Funk 1973) (Continued)

Cultural Unit	Tradition	Period or Phase		Date	General Settlement Patterns	General Subsistence Systems	Kinds of Archeological Remains Representative of Period	
Native American	Woodland Iroquois	Garoga		AD 1500	Increasingly larger villages about 8-10 acres; located on high, readily defended hills, well back from the Mohawk River or major tributaries	Horticulture, hunting, gathering	Enlarged longhouses; deep storage pits; numerous potsherds; few stone arrowpoints	
		Chance		AD 1420	Three or four contemporary village communities	Horticulture, hunting, gathering	Enlarged longhouses; deep storage pits; numerous potsherds; few stone arrowpoints	
		Oak Hill		AD 1350	Fortified village site	Horticulture, hunting, gathering	Longhouse patterns; deep storage pits; numerous potsherds; few stone arrowpoints	
		Castle Creek		AD 1300	Fortified village sites averaged 2 acres; true longhouse indicated	Horticulture, hunting, gathering	Longhouse patterns; numerous, deep storage pits; smaller structures indicated by post molds; ceramics; few stone tools	
		Canandaigua		AD 1156	Fortified village sites range from 1/2 to three acres in size	Horticulture, hunting, gathering	House structures, numerous storage pits; evidence of cannibalism, ceramics; few stone tools	
		Owasco						
		Carpenter Brook						
		Hunter's Home		AD 950	Village sites averaging 1/2 acre occupied permanently; oblong and rectangular house floors; mass burial in ossuaries	Horticulture, hunting, fishing, gathering	Small, medium-sized and large oblong house patterns; no storage pits; ceramics; few stone tools; Levanna points; rituals associated with bear cult	
		Point Peninsula						
		Burnt Hill			Very small camps in Lake George area	Hunting, fishing, gathering	Debitage and burned stones liberally sprinkled through the occupation zone; sparse food remains; stone projectile points; basin-shaped hearths; larger pits	

Table 2-2. A SUMMARY OF THE CULTURAL CHRONOLOGY OF THE AREA OF ROTTERDAM HOUSING (Funk 1976; Ritchie and Funk 1973) (Continued)

Cultural Unit	Tradition	Period or Phase	Date	General Settlement Patterns	General Subsistence Systems	Kinds of Archeological Remains Representative of Period	
Kipp Island			AD 700	Large, recurrent semipermanently occupied camps; small, recurrent seasonal camps; cemeteries	Hunting, fishing, collecting of plants and nuts, incipient agriculture	House remains; hearths; pits; marsh middens; subsistence remains; chipped stone projectile points and drills; prismatic flake knives; chipped sandstone disks; pitted stones; hammerstones; grooved netsinkers bone gorges; barbed bone points; pottery	
Fox Creek			AD 450	Seasonal rounds with utilization of back-country, rockshelters and open camps, as well as camps along the Hudson River and its tributaries Restricted wandering settlement pattern	Hunting white-tailed deer and collecting hickory nuts, butternuts, and acorns. Emphasis on hunting along major streams in all seasons	Fox Creek points and ceramics; larger, heavier scrapers, paucity of rough stone tools and polished stone woodworking tools; objects of ritual function are rare	
Adena							
Middlesex				Known from burial components; inland and bluff sites utilized briefly; sites on inland streams. Not prominent in the Hudson Valley	Hunting white-tailed deer and shellfish collecting	Small hearths with burned soil, charcoal ash, burned bones; earth ovens; Adena-like stone points; bundle burials with grave goods, steatite pots; Vinette pottery; red other associated with burials	
Meadowood			760 BC	Central base camps near major waterways such as Hudson River; smaller, seasonally utilized fishing camps near small tributaries in fall and winter; cemeteries located some distance from campsites	Strong riverine and lacustrine orientation. Intensive use of plant foods such as Chenopodium (goosefoot) and Polygonum (smartweed); hunting also important	Meadowood projectile points; Meadowood cache blades; notched netsinkers; quarry blanks and lithic debitage; birdstones; Vinette pottery; large storage pits; middens	
Orient			870-90 BC	Coastal orientation with related inland hunting camps and small, low lying camps along major waterways in the Hudson Valley	Shellfish collecting; hunting; gathering wild plant food on coastal sites; hunting emphasized at the Hudson Valley sites	Orient Fishtail points; knives; drills; hammerstones; paintstones; soapstone vessels; bone awls; Vinette pottery; large cooking pits; stone platforms; hearths	

Table 2-2. A SUMMARY OF THE CULTURAL CHRONOLOGY OF THE AREA OF ROTTERDAM HOUSING (Funk 1976; Ritchie and Funk 1973) (Concluded)

Cultural Unit	Period or Phase	Date	General Settlement Patterns	General Subsistence Systems	Kinds of Archeological Remains Representative of Period
Susquehanna					
Archaic	Snook Kill	1470 BC	Numerous small inland hunting camps; occasional, larger, recurrently occupied camps located on high, sandy river terraces	Hunting emphasized at smaller camps; numerous activities at riverine sites; gathering plant foods	Snook Kill points; preforms; biface knives; end and side scrapers; drills; hammerstones; anvilstones; basin-shaped hearths; large, deep cooking pits; cremation burials in shallow pits
	River	1930-1340 BC	Small inland camps in falls and winter and larger river camps serving as central base camps in spring and summer	Both fishing and hunting were important	Points; bannerstones; fishing-associated artifacts notably rare at riverside loci; effigy atlatl weights; effigy pestles; post molds possibly from house structures; floral remains including numerous acorns
	Sylvan Lake	2210 BC	Longer occupancy of spring-summer sites than of fall-winter sites. Restricted Wandering Pattern	Seasonal economic rounds with an emphasis on hunting	Narrow-stemmed projectile points are the prevalent functional artifact type; occasional notched atlatl weights; biface knives; drills; wide scrapers; hammerstones; choppers
Paleo-Indian	Vosburg	2780-2524 BC	Seasonally scheduled camps in rockshelters; isolated open camps; camps on inland streams; low lying camps along the Hudson; high bluff sites on the river; lakeside camps	Seasonal hunting, fishing and gathering	Vosburg points; ulu; ground slate points and plumets present only on sites along major bodies of water (absent on back-country sites)
	Laurentian				
	Vergennes	4610 BC	Small camps near lakes and major streams during spring and summer; smaller back-country open sites and rockshelters occupied in fall and winter	Fall-winter camps emphasize hunting; summer-spring camps are larger, and exhibit a wider range of activities, including fishing and canoe-making	Otter Creek points; ulu; ground slate points; plumets; refuse accumulations which include debitage, fire-cracked stones, charcoal, calcined refuse bone; small number of hearths
	Clovie	10,000-7000 BC	Small, highly mobile bands; sites on high, well-drained land, especially knolls, drumlins, terraces	Hunting and foraging	Fluted points; thumbnail scrapers; side scrapers; bifacial knives; debitage

Late Archaic (3500-1000 BC). A settlement pattern based on the seasonal variation of resource accessibility developed by this time. The site types comprise: 1) small, relatively isolated, back-country open camps; 2) back-country rockshelters and caves; 3) open camps on major tributaries of the Hudson; 4) open camps at low elevations on the Hudson; 5) high bluff sites on the Hudson; and 6) open camps on large lakes (Ritchie and Funk 1973). Sites of the Laurentian and Susquehanna traditions fall within this site typology.

Vosburg and Sylvan Lake elements occur on all the basic site types in the Hudson and Mohawk Valleys. Hunting was the major activity of the Sylvan Lake people. River Phase sites tend to be small camps located in the lower Mohawk River Valley. They yield evidence of hunting, butchering, cooking and woodworking. The Snook Kill phase is represented throughout the Hudson and Mohawk Valleys and into eastern Massachusetts.

The majority of larger sites are located on high sandy river terraces. Smaller riverine sites are also known. Few inland camps have been associated with this phase (Ritchie and Funk 1973).

In general, Late Archaic sites are more numerous than sites of earlier periods and the associated tool assemblages are more varied. A Restricted Wandering subsistence-settlement pattern is suggested. It is assumed that Archaic groups possessed a simple egalitarian sociopolitical organization. Band organization probably characterized their sociopolitical structure (Ritchie and Funk 1973).

Early-Middle Woodland (1000 BC - AD 1000). The principal Early Woodland manifestation in New York State is the Meadowood phase, though Middlesex elements are more prevalent in the eastern portion of the state (Funk 1976). The distribution of Early Woodland artifacts demonstrates a decided preference for the Hudson and major tributaries during all seasons. Early-Middle Woodland sites occur on river terraces and are generally small. Adena points scattered throughout the Hudson Valley may represent a separate horizon from the Meadowood points (Funk 1976).

The Fox Creek phase was the dominant Middle Woodland cultural expression in the Mohawk Valley (Snow and Starna n.p. 1983). This phase has a widespread distribution with evidence coming from the Susquehanna, Schoharie, Delaware and Hudson valleys. Diagnostic ceramics are net-marked and are interpreted to have associations in New York coastal regions (Funk 1976). The Middle Woodland economy as represented by the Fox Creek phase remained essentially a hunting-gathering one with a growing reliance on fish and mollusks. The tool assemblage shows a lack of ground stone woodworking tools. Unlike central, northern and eastern New York, few ornamental objects have been found and burial data are scanty. Hopewellian influences from Ohio are minimal.

The intrusion and eventual dominance of Point Peninsula traits in eastern New York resulted in the disappearance of many Fox Creek phase elements. The Kipp Island phase economy included incipient agriculture along with hunting and gathering however, this phase is minimally represented in the Mohawk Valley. During the succeeding Hunter's Home phase, cultivation played a more prominent role in subsistence (Funk 1976). Settlements from early Kipp Island to late Hunter's Home grew in

size and were occupied for longer time periods. Population size also grew. Ritchie and Funk (1973) hypothesize that corporate social groups such as lineages or clans had developed during the Hunter's Home phase.

Late Woodland (AD 1000 - European Contact). Ritchie and Funk (1973) characterize the Late Woodland as a developmental continuum from the Owasco tradition to the Iroquois tradition. Site classification for Late Woodland sites includes the following: 1) villages (undefended or palisaded); 2) hamlets; 3) recurrent camps; 4) temporary camps; 5) ceremonial dumps; 6) cemeteries and ossuaries; and 7) workshops.

Most Late Woodland habitation sites yield single components. They tend to be larger than Early-Middle Woodland sites and are located on elevated areas which are easily protected. Site selection was based on the requirements and possibilities of an agricultural economy and the need for defense. Owasco sites included oblong and rectangular house floors, large storage pits and extensive refuse accumulations.

Carpenter Brook village sites were not palisaded. Corn, beans, and squash were cultivated. Artifactual materials suggest ritual behavior associated with a bear cult (Ritchie and Funk 1973).

Canandaigua phase sites were stockaded. Numerous large food storage pits were discovered and their contents suggest year-round site occupation (Ritchie and Funk 1973).

Few sites of the Castle Creek phase of the Late Owasco tradition have been extensively excavated. Sites averaged about one acre in size. In the following Oak Hill phase, the true longhouse has been recognized. Floor plans are identical to those which characterized later Iroquoian houses (Ritchie and Funk 1973).

Chance phase sites exhibit little evidence of fundamental change. However in the Garoga phase, village and house size increased. Village sites were located on high, readily defended hills, well back from major rivers and tributaries. Garoga sites, protected by palisades, extended for up to ten acres. Oak Hill, Chance and Garoga phases have been associated with the Mohawk Iroquois.

Human faces incised on pots and pipes began to appear in the Castle Creek phase. These effigies may be related to the masking complex prevalent in the northeast at the time of European contact. These may also relate to the Iroquois False Face Society recorded in historic times.

Continuities in settlement patterns, burial customs, and other data indicated that historically documented traits such as longhouses and communal living, medicine societies, warfare, and cannibalism were present among the prehistoric Owasco, Oak Hill, Chance and Garoga phases. Ties can also be traced to the Ontario Iroquois Tradition prior to European contact.

Early historic accounts describe stockaded villages in the Hudson Valley and coastal New York. However, archeological data prior to the mid-seventeenth century do not corroborate these reports. Other cultural traits characteristic of the New York Iroquois tradition include ceramic

pipes, evidence of cannibalism, and Late Woodland burials. Regional differences between settlement areas in New York state may indicate disparities in social and religious institutions (Ritchie and Funk 1973).

### 2.2.2 Ethnohistory

Expansion of European settlement. The spread of European settlement in the Mohawk River valley resulted in the displacement of the local Mohawk Indian residents. The archeological record indicates that Mohawk sites during the early Contact Period (1615-1635) were located well back from the Mohawk River on high, readily defended hills. Near the end of the seventeenth century, heightened participation in the fur trade and military conflicts resulted in a shift in site location to high ridges and kame terraces along the river. Associated artifactual assemblages also demonstrated changes. There is a notable decline in the frequency of projectile points and unifacial stone tools following the Hunters Home phase (Ritchie and Funk 1973:363).

### 2.2.3 History

Rural/Urban Transition. A group of Dutch settlers, led by Arent Van Curler, purchased land from the Mohawks in 1662. They settled on the south shore of the Mohawk and named their community Schenectady. In 1670, Daniel Janse Van Antwerp built a house west of Schenectady in Rotterdam (Kimball 1942b:393-4). The belt of flat land along the southern shore of the Mohawk River was known among the Dutch settlers as Groote Vlachte or the Bouwlandt. According to local lore this area had been cleared of forest growth by the Mohawk Indians prior to Dutch occupation. However, Kimball (1942b:413) attributes the lack of forest vegetation to scoring by spring freshets that seasonally flood the flats in the valley. Early historic site location depended on both the location of good farm land and access to land and water transportation routes.

Schenectady which incorporated in March 1778 included four wards, two urban wards located primarily within the present city limits and two large rural farming wards. The third ward was incorporated as the town of Rotterdam on April 14, 1820 (Craig and Papp 1976).

Heavy Industry. Thomas Edison located his Edison Machine Works in 1886 at the site of the former Jones Car Works. This laid the foundation for the future General Electric Company. Industries in 1887 included: an oil mill on the Poetens Kill which manufactured linseed oil; a saw and grist mill one mile lower down the same stream; and the E. Crane and Company's Thread and Twine Factory. Agricultural products of Rotterdam were grain, bay straw, potatoes, broom-corn and fruit. The manufacture of brooms was important into the 1880's. Rye was cultivated in the sandy portion of town, hay in the uplands, and much broom-corn on the flats (Craig and Papp 1976).

By the late nineteenth century the Erie Canal traversed the entire length of the town on the northeast, running for eight miles along the Mohawk River and the River Road. Many of the town's residents were employed as locktenders, towpath walkers who patrolled the canals, and repair and maintenance crews. Canalside shops, services, and taverns



began to appear and thrive. There were three canal locks in Rotterdam. These were abandoned in about 1918 resulting in the decline of many small associated businesses.

Railroads were built in the area in the nineteenth century. The New York Central Railroad crossed the southeast part of town and the West Shore Railroad crossed the town centrally from north to south. Crossing town east to west was the Schenectady and Duanesburgh Railroad. The Boston, Hoosac Tunnel and Western Railroad had its western terminus in the north. The railroads played a major role in the town's subsequent industrial development.

Mercantile. The Schenectady Army Depot with which Rotterdam Housing was formerly associated, was originally constructed in 1918 with additions made in the 1930s and 1940s. In 1968 the Depot was phased out as a military facility. At that time Rotterdam Housing, a portion of the Depot, was assigned to Watervliet Arsenal. Many of the former Schenectady Army Depot buildings were taken over by Northeastern Industrial Parks, Inc. which contains facilities for General Electric's Gas Turbine Divisions, New York State's Correctional Services, and the studios of Channel 17 (WMHT), a part of the National Educational Network.

In the 1940s the Rotterdam area experienced a building rush. This resulted in the stripping of wooded areas and the filling in of stream headwaters. Problems with flooding necessitated the construction of drainage ditches and storm sewers.

Rotterdam's water supply system was constructed in the 1950s. Also in the early 1950s Rotterdam constructed its first large shopping plaza. The newly built New York State Thruway served Rotterdam with two interchanges. In the 1960s two additional shopping centers were built. A local newspaper, The Rotterdam Weekly News, began publication in 1964.

Currently the major sources of employment are provided by Schenectady Chemicals, General Electric and Rotterdam Industrial Park. Most employees are blue collar workers (Schenectady Chamber of Commerce, 1983, personal communication).

## 2.3 ARCHEOLOGICAL RESEARCH DIRECTIONS

### 2.3.1 Regional Concerns

Archeological data from the Rotterdam Housing region can contribute to a number of research questions about the prehistory and history of New York. These questions concern clarification and testing of established models which describe regional cultural chronologies and lifestyles. These data should also contribute to the investigation of study units defined by the New York State regional preservation plan, currently being developed by the New York State Historic Preservation Office. Relevant defined study units include: Mohawk Drainage (Paleo-Indian, Archaic and Woodland); Contact Period (Five-Nation); Colonial (Dutch); Federal (eastern New York); and Industrial (Main Industrial/Transportation Corridor [Mohawk/Erie Canal]) (Bruce Fuller, 1983, personal communication). Most of the study units have not yet been developed sufficiently for their use in the preparation of this overview.

While numerous Archaic and Woodland components have been recognized in the Mohawk Valley, little is understood of the variations which existed in their use of this riverine context. Further systematic research in the region could clarify this.

Researchers have hypothesized that subsistence - settlement systems of Late Archaic groups were similar to those of Early Woodland groups. This requires further testing. The association of ceramics with Early Woodland assemblages is a key characteristic differentiating them from Late Archaic assemblages. The significance of ceramic artifacts as indicators of cultural differences is not well understood and could be studied in this region.

The archeological record documents a series of shifts in the directions of cultural connections during the Meadowood, Fox Creek and Hunters Home Phases. Archeological research in the region should be designed to verify this series of reversals and seek to understand them in terms of subsistence, trade and other regional cultural dynamics (Snow and Starna n.p. 1983).

Another regional concern is to determine why Hopewell connections were not strong in the Mohawk River Valley when compared to earlier Adena connections. Indications are that the Adena trade network extended from Ohio to the Mohawk drainage during the Meadowood phase but was not succeeded by the later Hopewell network (Snow and Starna n.p. 1983).

Another issue for the prehistoric period relates to the transition from hunting and gathering to subsistence based upon horticulture. By AD 1000 a major shift in subsistence and settlement patterns occurred. The problem is to explore the process of the development of true horticulture and its impact on other aspects of culture (Snow and Starna n.p. 1983).

Another regional concern relates to the impact which early European settlement had on Native American subsistence and settlement practices. Shifts in site location and economic focus resulted from the encroachment of early Dutch settlers into the Mohawk area, but little is known from the archeological record of the cultural shifts which occurred.

Nineteenth century developments in industry and transportation also had dramatic impacts on communities living in the Mohawk River valley. Such changes are worthy of research consideration.

### 2.3.2 Installation-Specific Archeological Research Directions

There has been no archeological work undertaken at Rotterdam Housing. However, there are several known sites in the vicinity. The installation's location within two miles of a major river system and within one mile of several tributary streams suggests that as yet unknown sites may be present at this facility. Any prehistoric sites which may be located at Rotterdam Housing in the future could provide useful data in addressing the research questions discussed in Section 2.3.1.

As yet unknown historic archeological remains which date from the civilian ownership of the area can provide data relevant to the study of

local history. Such data also relate to changes in a rural area caused by industrialization and urbanization.

Archeological remnants of the former Schenectady Army Depot and the current Watervliet Arsenal directorship may be extant. Such remains could provide information which addresses questions about military construction techniques and the lifestyles of military personnel and their families. However, these remains may not be considered significant.

3.0

AN ASSESSMENT OF ARCHEOLOGICAL RESOURCES  
PRESERVATION AND SURVEY ADEQUACY

---

3.1 ENVIRONMENTAL CONSTRAINTS TO SITE PRESERVATION

Prehistoric archeological site distribution in the Rotterdam Housing region is relatively dense though there are no recorded sites on the government property. Prehistoric activity in the Mohawk River Valley spans the Paleo-Indian through Late Woodland periods with the greatest known site representation for the Late Archaic and Woodland cultural periods.

Archaic and Woodland sites occur on terraces of the Mohawk River or nearby major tributaries. This type of setting is basically present at Rotterdam Housing. Sites are generally small, 400 - 1000 m<sup>2</sup>, and often contain middens, hearths and basin-shaped pits. Site types include habitation sites, small camps and cemeteries. Some larger Late Woodland sites are known in the Mohawk Valley on elevated areas which were easily protected. Some inland, back-country locations were also utilized, though ephemerally (Snow and Starna n.p. 1983; Ritchie and Funk 1973).

Early European contact sites are known from the written accounts of Dutch settlers. Few of these sites have been discovered and archeologically investigated (Funk 1976). Some of these may have been destroyed by more recent land development. Early historic site locations depended upon access to good farm land and suitable areas along the Mohawk River for boat access.

Minimal natural erosion has occurred at Rotterdam Housing. Historic land development represents the greatest constraint to archeological site preservation.

3.2 HISTORIC AND RECENT LAND USE

Rotterdam Housing and the surrounding area have been the focus of construction, development, landscaping and other earth moving operations that continue to the present day. Due to the large amount of ground disturbance in historic times, features of the prehistoric and early historic cultural periods are no longer visible.

Until 1968, Rotterdam Housing formed part of the Schenectady Army Depot. The facility consists of 19 permanent structures. Eight are multi-family structures which provide 50 family living units. Of them, 46 are Wherry Housing constructed in 1952. Other structures include 2 single-family units which date from 1918 and 1939; 8 multiple garages; and 1 maintenance shop (originally built as a garage in 1916).

Rotterdam Housing has been divided into nine Ground Disturbance Areas (GDA) (Figures 3-1a and 3-1b) to facilitate the following discussion of prior ground disturbance. Rotterdam Housing Area No. 1 includes GDA-1 - GDA-5. Rotterdam Housing Area No. 2 includes GDA-6 - GDA-9. The information discussed here is summarized and supplemented in Table 3-1 which also provides primary and secondary references for these data.

GDA-1. The principal structures in this area are Buildings 474, 476 and 477. They are respectively a Quarters and two garages. Surrounding the Quarters is a grassy area. An asphalt and concrete roadway leads into the housing area from Duanesburg Road. This paving leads from the roadway to the garages.

GDA-2. This area includes Buildings 473, 478 and 479. These are a Quarters and two Family Quarters Garages. The Quarters in this area is also surrounded by a grassy area. The garages have asphalt and concrete paving around them. The paving continues along a roadway which is an offshoot of the Main Entrance roadway.

GDA-3. Structures in this area include Buildings: 460, Quarters; 461, Family Quarters Garages; 463, Quarters; and 465, Maintenance Shop. The Quarters and the Maintenance Shop are surrounded by a grassy area. An asphalt and concrete roadway interconnects all of the buildings.

GDA-4. Building 475, Quarters, is the only structure in this GDA. The remaining portions are comprised of a grassy area and an asphalt and concrete roadway.

GDA-5. Structures in this area include three Quarters, Buildings 470, 471 and 472, and Family Quarters Garages, Building 480. These are surrounded by grassy areas. During a site visit on May 6, 1983, an area measuring approximately 20 ft. in diameter located just south of Building 471 was observed as disturbed. Informants reported that excavation had been required to repair a subsurface utility line.

GDA-6. This area includes a Quarters, Building 492, and a Garage, Building 493. It also includes an asphalt and concrete roadway and some grassy areas.

GDA-7. The two structures in this area are Building 490, Quarters, and Building 491, Garages. Portions of this GDA are paved with asphalt and concrete and the remaining portions are grassy.

GDA-8. There are no structures in this area. It is a grass covered yard.

GDA-9. A portion of an asphalt and concrete paved roadway is located in the northern portions of this area. The remaining portion is a grass covered yard.

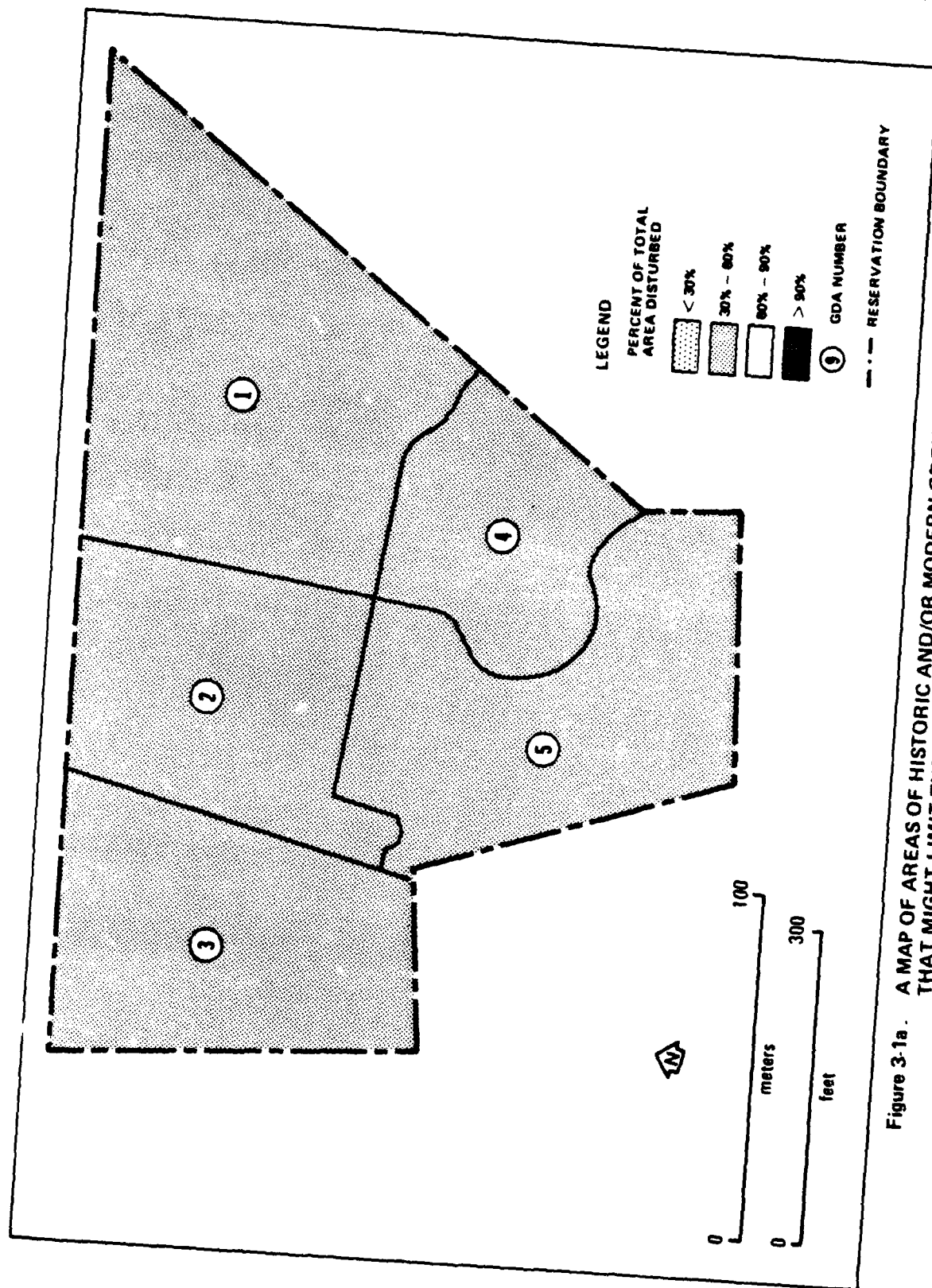


Figure 3-1a. A MAP OF AREAS OF HISTORIC AND/OR MODERN GROUND DISTURBANCE THAT MIGHT LIMIT THE PRESENT ARCHEOLOGICAL RESOURCE BASE AT ROTTERDAM HOUSING (HOUSING AREA NO. 1)

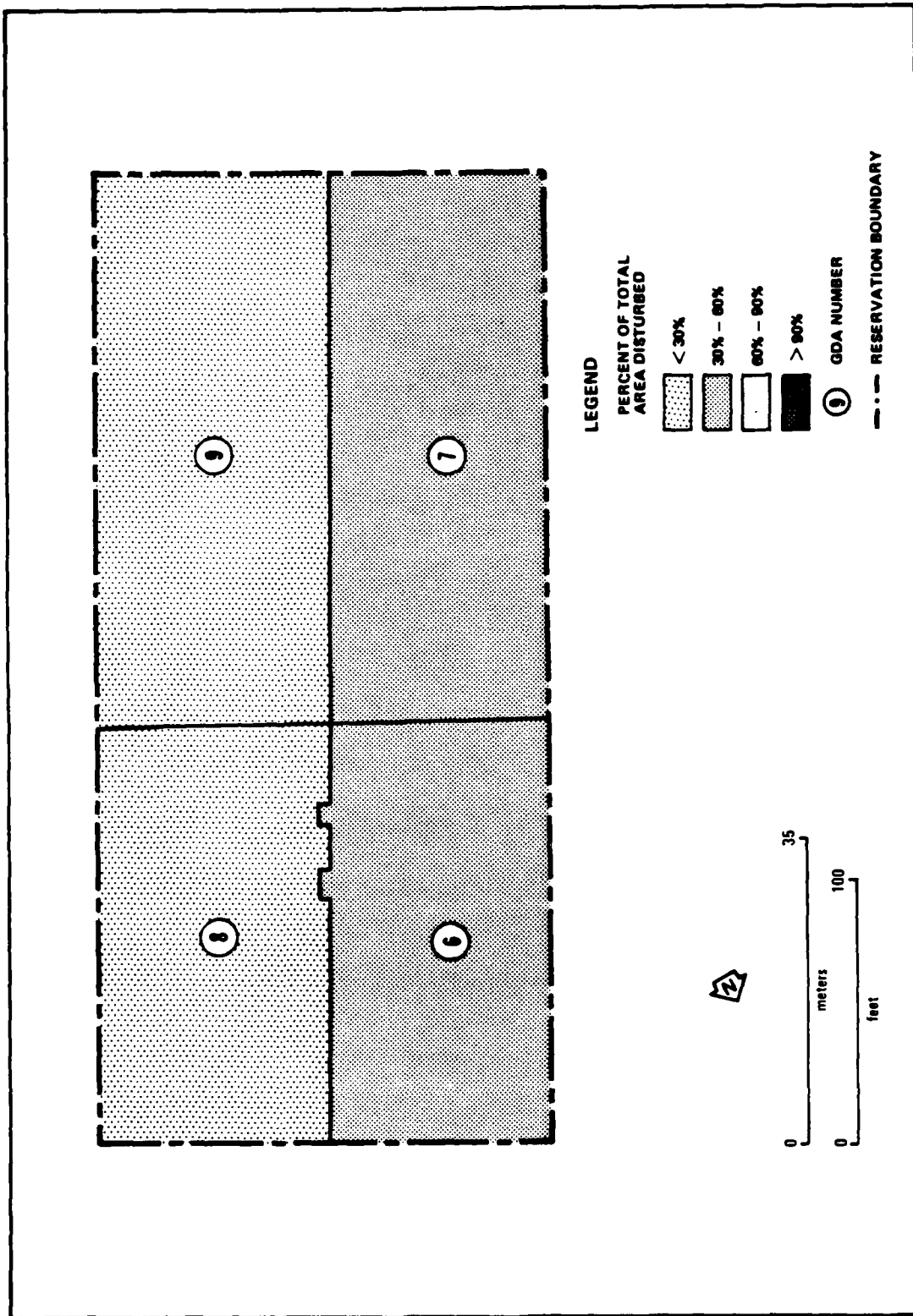


Figure 3-1b. A MAP OF AREAS OF HISTORIC AND/OR MODERN GROUND DISTURBANCE THAT MIGHT LIMIT THE PRESENT ARCHEOLOGICAL RESOURCE BASE AT ROTTERDAM HOUSING (HOUSING AREA NO. 2)

Table 3-1. A SUMMARY OF HISTORIC AND MODERN GROUND DISTURBANCE THAT MIGHT LIMIT THE PRESENT ARCHEOLOGICAL RESOURCE BASE AT ROTTERDAM HOUSING

GDA No	Type of Disturbance	Date Constructed (yr)	Reference <sup>a</sup>	Area Disturbed (acres)	Estimated Depth Below Surface (ft)	Ratio of Disturbed to Total Area	Location of Disturbed Area					USGS Quad Sheet <sup>c</sup>	Coincidental Sited
							UTMb		Legal Reference				
							Northing	Easting	Township	Range	Section		
GDA-1	Construction of:			2.52		4:10	4737628	582981	Rotterdam			S780	
	Bldg. 474	1952	RPI-83										
	Bldg. 476	1952	RPI-83										
	Bldg. 477	1952	RPI-83										
	Asphalt and concrete paving		—		1-2								
GDA-2	Underground utilities	var.	MPBIM 18-02-01R		3-10								
	Construction of:			1.38		3:10	4737633	582939	Rotterdam			S780	
	Bldg. 473	1952	RPI-83										
	Bldg. 478	1952	RPI-83										
	Bldg. 479	1952	RPI-83										
GDA-3	Asphalt and concrete paving		—		1-2								
	Underground utilities	var.	MPBIM 18-02-01R		3-10								
	Construction of:			1.55		4:10	4737633	582898	Rotterdam			S780	
	Bldg. 460	1939	RPI-83										
	Bldg. 461	1939	Dwg. G54-T40		0-5								
GDA-5	Bldg. 463	1918	RPI-83										
	Bldg. 465	1916	Anon 1983										
	Asphalt and concrete paving		—		1-2								
	Underground utilities	var.	MPBIM 18-02-01R		3-10								



Table 3-1. A SUMMARY OF HISTORIC AND MODERN GROUND DISTURBANCE THAT MIGHT LIMIT THE PRESENT ARCHEOLOGICAL RESOURCE BASE AT ROTTERDAM HOUSING (Cont'd)

GDA No	Type of Disturbance	Date Constructed (yr)	Reference <sup>a</sup>	Area Disturbed (acres)	Estimated Depth Below Surface (ft)	Ratio of Disturbed to Total Area	Location of Disturbed Area					USGS Quad Sheet c	Coincidental Sited
							UTMb		Legal Reference				
							Northing	Easting	Township	Range	Section		
GDA-4	Construction of:			.92		2:10	4737591	582962	Rotterdam		S780		
	Bldg. 475	1952	RPI-83										
	Asphalt and concrete paving		—		1-2								
	Underground utilities	var.	MPBIM 18-02-01R		3-10								
GDA-5	Construction of:			1.74		5:10	4737574	582933	Rotterdam		S780		
	Bldg. 470	1952	RPI-83										
	Bldg. 471	1952	RPI-83										
	Bldg. 472	1952	RPI-83										
	Bldg. 480	1952	RPI-83										
	Underground utilities	var.	MPBIM 18-02-01R		3-10								
GDA-6	Construction of:			.31		6:10	4737398	583069	Rotterdam		S780		
	Bldg. 492	1939	Dwg. 625-8400.1		7-21								
	Bldg. 493	1942	RPI-83										
	Asphalt and concrete paving		—		1-2								
	Underground utilities	var.	MPBIM 18-02-01R		3-10								

Table 3-1. A SUMMARY OF HISTORIC AND MODERN GROUND DISTURBANCE THAT MIGHT LIMIT THE PRESENT ARCHEOLOGICAL RESOURCE BASE AT ROTTERDAM HOUSING (Concluded)

GDA No	Type of Disturbance	Date Constructed (yr)	Reference <sup>a</sup>	Area Disturbed (acres)	Estimated Depth Below Surface (ft)	Ratio of Disturbed to Total Area	Location of Disturbed Area					USGS Quad Sheet <sup>c</sup>	Coincidental Sites <sup>d</sup>
							UTM <sup>b</sup>		Legal Reference				
							Northing	Easting	Township	Range	Section		
GDA-7	Construction of:			.39		4:10	4737382	583054	Rotterdam			S780	
	Bldg. 490	1939	Dwg. 625-5337		5-7								
	Bldg. 491	1939	Dwg. G55-P25		0-4.5								
	Asphalt and concrete paving		—		1-2								
GDA-8	Underground utilities	var.	MPBIM 18-02-01R		3-10								
	Construction of:			.31		2:10	4737392	583082	Rotterdam			S780	
	Underground utilities	var.	MPBIM 18-02-01R		3-10								
	Construction of:			.46		2:10	4737382	583064	Rotterdam			S780	
GDA-9	Asphalt and concrete paving		—		1-2								
	Underground utilities	var.	MPBIM 18-02-01R		3-10								

Note:

- Unless otherwise noted, all drawings are on file at Watervliet Arsenal, Facilities Engineering Division. Drawing numbers unless otherwise noted refer to Watervliet Arsenal file numbers. MPBIM = Master Plan Basic Information Maps. RPI-83 = Real Property Inventory 1983
- UTM Zone 18
- S780 = Schenectady, NY, 7.5'; 1980 edition
- Within the GDA

While available documentation for the Rotterdam Housing facility is limited, it is assumed that pre-Army construction and demolition (Beers and Beers 1866) were a source of prior land disturbance. Potentially this land was used agriculturally prior to its acquisition by the Army. Plowing has been shown to have a moderate impact on cultural resources. Some land disturbance activities may have been conducted by the Army in the 1930s (USGS 1930). Numerous underground utility lines located throughout the facility are an additional source of ground disturbance (Table 3-1; MPBIM 18-02-01R). These include water, gas, sewer, steam, oil and electrical lines, and storm drains. The depth and extent of disturbance associated with these utilities varies from area to area.

### 3.3 PREVIOUS CULTURAL RESOURCE INVESTIGATIONS; COVERAGE AND INTENSITY

There have been no archeological investigations conducted within the present boundaries of Rotterdam Housing (Tables 3-2 and 3-3).

### 3.4 SUMMARY ASSESSMENTS OF DATA ADEQUACY, GAPS

No archeological resources have been recorded at Rotterdam Housing. Given the facility's location in the Mohawk River Valley, there is a moderate potential that as yet unrecorded prehistoric and early historic archeological resources could be discovered at Rotterdam Housing.

The available documentation for this area in the form of maps is limited. Therefore it is possible that this study has not identified all potentially remnant archeological resources at Rotterdam Housing.

**Table 3-2. ARCHEOLOGICAL SURVEYS CONDUCTED ON ROTTERDAM HOUSING**

[illegible]

**NONE**

Table 3-3. ARCHEOLOGICALLY RELEVANT RESEARCH INVESTIGATION, EXCLUSIVE OR ARCHEOLOGICAL SURVEYS, CONDUCTED ON ROTTERDAM HOUSING

Study No.	Study Type	Study Date	Institution Agency, Firm	Principal Investigator	Bibliographic Reference	Location				USGS Quad Map	Associated Archeological Resources
						UTM		Legal	Township		
						Northing	Easting				

NONE

4.0

KNOWN ARCHEOLOGICAL RESOURCES ON ROTTERDAM HOUSING

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4.1 KNOWN ARCHEOLOGICAL RESOURCES AT ROTTERDAM HOUSING

At present, there are no known historic or prehistoric archeological resources at Rotterdam Housing (Tables 4-1, 4-2 and 4-3).

4.2 POTENTIAL ARCHEOLOGICAL RESOURCES AT ROTTERDAM HOUSING

Rotterdam Housing's location in the Mohawk River drainage near known prehistoric sites suggests that as yet unrecorded sites may be extant at the facility. Unrecorded aboriginal archeological sites may lie in undisturbed portions of Rotterdam Housing property.

A nineteenth century topographical atlas map of Rotterdam, New York shows roads which are in the same alignments as the current Curry, Duaneburg and Fort Hunter Roads which intersect just north of Rotterdam Housing. The map which depicts individual structures indicates structures very near Rotterdam Housing but not within the same property lines (Beers and Beers 1866). No additional maps were examined during the course of data collection.

The conclusion that there are no potential pre-military or military archeological historic period sites at Rotterdam Housing should be considered impressionistic rather than definite. Some of the extant structures at Rotterdam Housing date to 1916, 1918, 1939 and 1952. The structures may have at one time been associated with outbuildings which have since been razed. While these most likely would not be significant, there may be archeological remnants of such former structures at Rotterdam Housing.

Table 4-1. PRESENTLY IDENTIFIED ARCHEOLOGICAL RESOURCES AT ROTTERDAM HOUSING

Site Number	Site Recorder	Date of Site Record	SHPO Survey Number	Site Record Repository	Survey Collection Policy	Current Status of Investigation	NRHP Status	State, Local Status	Architectural Association	Bibliographic Reference
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NONE

Table 4-2. PRESENTLY IDENTIFIED ARCHEOLOGICAL COMPONENTS AT ROTTERDAM HOUSING

Site Number	Unit Age			Unit Description					Evaluation							
	Temporal Unit		Date	Tradition (Period)	Phase	Artifacts	Features	Context	Landform	Dimension						
	Years BC/AD	DM								Area (m <sup>2</sup> )	Depth (m)	Ascribed Function	Per- cent In- tact	Value Inte- grity	RV	CR

NONE



Table 4-3. PRESENTLY KNOWN ARTIFACT, ECOFACT, OR DOCUMENTARY COLLECTIONS FROM ARCHEOLOGICAL RESOURCES AT ROTTERDAM HOUSING

Site Number, Name	Collection Characteristics					
	Collection Location		Artifact		Ecofact	
	Curatorial Repository	Accession Number(s)	Brief Description	Size/No.	Brief Description	Size/No.

NONE

Table 4-4. POTENTIALLY IDENTIFIABLE BUT NOT PRESENTLY RECORDED  
 ARCHEOLOGICAL RESOURCES AT ROTTERDAM HOUSING

Site Number, Name	Reference	Description	Research Value CR
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NONE

5.0

AN ASSESSMENT OF THE SIGNIFICANCE OF THE  
ARCHEOLOGICAL RESOURCES AT ROTTERDAM HOUSING

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5.1 THE SIGNIFICANT RESOURCES

There are no known archeological resources at Rotterdam Housing (Table 5-1). However prehistoric aboriginal remains and pre-military historic remains may exist in undisturbed areas of the facility. Archeological resources at Rotterdam Housing which relate to the prehistoric and early historic periods may be significant. Determinations cannot be made in the absence of site-specific data.

5.2 IDEAL GOALS AND OBJECTIVES

Given the absence of known significant archeological resources at Rotterdam Housing, a discussion of how to best study and manage resources which might be identified in the future is premature. At the present time the first objective of any archeological planning program at Rotterdam Housing should be the development of a procedure to ensure that if any as yet unidentified archeological cultural resources in undisturbed portions of the facility are located, they will be considered in future planning.

Table 5-1. SUMMARY OF SIGNIFICANT ARCHEOLOGICAL RESOURCES AT ROTTERDAM HOUSING

Temporal Unit	Thematic Unit	Resource Type	Type Occurrence			Landform Assn.	Physical Integrity	Research Value <sup>a</sup> CR <sup>b</sup>	Socio-cultural Value <sup>c</sup> SCV CR <sup>b</sup>	
			Known Occurrences (no.)	Potential Occurrences (no.)	Other Likely Occurrences					

NONE

- This is a subjective summary assessment of the overall research value (RV) of the resource class. It is an evaluation of the class' quality of preservation, representation of activity diversity or uniqueness, and temporal distinctiveness or reflection of diachronic relationships. It incorporates the need to avoid triviality, but to acquire what may be redundant data so as to discern patterns among those data. Based on these research values, the resource class under discussion is ranked from 0 (no value) to 5 (highest value), including "NA" if such an evaluation is believed to be impossible given the available information.
- The Confidence Rating (CR) is a further evaluation of the perceived reliability of the research (RV) or sociocultural (SCV) values of the resource class. The following code records a judgement of that reliability, based on the available information: (1) the judgement is more guess than science, and likely not to be reliable; (2) the judgement is moderately reliable; (3) the judgement is most likely reliable.
- This is a subjective summary assessment of the overall sociocultural value (SCV) of the resource class. It is an evaluation of the social, religious, or political importance of the resource to a contemporary community, from 0 (no value) to 5 (highest value).

6.0

A RECOMMENDED ARCHEOLOGICAL MANAGEMENT PLAN  
FOR ROTTERDAM HOUSING

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6.1 FACILITY MASTER PLANS AND PROPOSED IMPACTS

Watervliet Arsenal has no plans for future development at Rotterdam Housing which will result in ground disturbance and thus disturbance of unrecorded archeological resources (Table 6-1). The current future development plans for Rotterdam Housing focus on the internal modernization of extant buildings. However, ongoing maintenance programs may affect undisturbed portions of Rotterdam Housing and consequently may affect as yet unrecorded archeological cultural resources.

6.2 APPROPRIATE ARCHEOLOGICAL MANAGEMENT GOALS WITHIN ROTTERDAM HOUSING

6.2.1 General Facility Planning

Portions of Rotterdam Housing which currently appear as grassy yards are relatively undisturbed. These areas have potential for yielding archeological cultural resources. Paved portions of the facility may also be relatively undisturbed and thus have some archeological potential. Any future facility plans which will result in the disturbance of previously undisturbed areas should include procedures for handling the eventuality of archeological site discovery. Procedures for handling emergency discoveries of previously unrecorded archeological remains should also be developed.

6.2.2 Project-Specific Resource Protection or Treatment Options

No project-specific resource protection or treatment options are required as of the date of this study.

6.2.3 A Summary of Recommended Management Directions and Priorities for Effective Compliance and Program Development

Two alternative archeological resource management tasks have been identified as a result of this study:

- o conduct an archeological survey of the undisturbed portions of Rotterdam Housing;
- o develop procedures to deal with unexpected discoveries of previously unrecorded archeological remains.

Table 6-1. A SUMMARY OF ON-GOING AND PLANNED ACTIVITIES AT ROTTERDAM HOUSING THAT COULD AFFECT ARCHEOLOGICAL RESOURCES

Description	Activities			Associated Resources				Impacts				
	Date <sup>a</sup>	Area <sup>b</sup>	Size (a.) <sup>c</sup>	Esti- mated Depth Below Surface (ft.)	Ratio of Dis- turbed to Total Area	Resource Class	Resources Known or Predicted <sup>d</sup>	NRHP Sta- tute	Other Value	Direct	Indirect	Mitigation Options

NONE

### 6.3 ESTIMATED SCOPES-OF-WORK AND COST LEVELS FOR PRESENTLY IDENTIFIABLE MANAGEMENT NEEDS

#### 6.3.1 Survey of the Undisturbed Portions of Rotterdam Housing

One management alternative involves conducting an archeological survey of the undisturbed portions of Rotterdam Housing. Rather than designing project by project surveys, it would be more efficient to apply a systematic shovel test strategy to both housing areas in Rotterdam Housing. Such testing would probably eliminate much of the area from future consideration and would indicate if there are archeological resources about which to be concerned. If cultural resources were discovered in any of the shovel tests, which should be placed at intervals of 75 ft., closer spacing of tests in the immediate vicinity of the positive tests would be in order. Such facility-wide testing would require two person days in the field and two additional person days for artifact analysis and report preparation. Estimated costs for this work would be about \$2000-2500.

#### 6.3.2 Unanticipated Archeological Site Discovery Procedure

DARCOM should be prepared to deal with discoveries of unanticipated prehistoric and historic archeological cultural resources at Rotterdam. The facility should develop a procedure for handling these situations in consultation with the New York State Historic Preservation Officer (SHPO) and the National Park Service. This procedure should stipulate notification requirements, the process of evaluating the resource and conducting any necessary additional investigations, and the source of funding.

An estimated 1-2 days of DARCOM personnel time and one day of SHPO's staff time will be required to develop an unanticipated site discovery procedure. An optional day of an archeological consultant's time at an estimated cost of \$500 may be useful in the procedure development process.

This study incorporates data about Rotterdam Housing taken from all available information sources. These data indicate that although several prehistoric and historic period sites have been reported in the immediate vicinity of Rotterdam Housing, there are no sites known to exist on either housing area of Rotterdam Housing.

Map sources for this facility were limited to one nineteenth century map and the as-built drawings from Watervliet Arsenal's drawing files. The 1866 Beers and Beers atlas map does not show development directly at the Rotterdam Housing sites. Portions of Rotterdam Housing seem to have been exposed to little or no ground disturbance and thus have archeological potential.

Institutions consulted as part of the basic data gathering for this report included: Watervliet Arsenal files; New York State Museum Cultural Education Center; New York State Historic Preservation Office; New York City Public Library, Main Branch; the Mohawk Valley Library Association, Schenectady, New York; New York Historical Society, New York City; Butler Library, Columbia University; The American Museum of Natural History; The Museum of The American Indian - Heye Foundation; and The Modern Military Branch of The National Archives. In addition, the "America: History and Life" data base of Lockheed's Dialog Information Retrieval Service, which contains abstracts from more than 2,000 history journals, was consulted.

A site visit to Housing Areas No. 1 and 2 of Rotterdam Housing was made by both authors. As part of the visit, all portions of the site were viewed. In addition, all construction plans maintained by Watervliet Arsenal for many of the Rotterdam Housing structures were reviewed.

No specific archeological management tasks are recommended at this time. However, prior to undertaking any activities within undisturbed areas, consideration must be given to the identification and evaluation of as yet unknown subsurface prehistoric and historic sites.

Recommended management steps include:

- o Archeological survey of the undisturbed portions of Rotterdam Housing;
- o Development of a procedure through which the installation may deal with unexpected archeological site discoveries.



8.0  
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